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REMARKS

This is in response to the Office Action dated June 5, 2002. In view of the foregoing amendments and following representations, reconsideration is respectfully requested.

In the previous Office Action, claims 8-11, 13-15, and 18-34 are rejected under 35 U.S.C. 112, second paragraph. This rejection is respectfully traversed.

In the explanation of the rejection, the Examiner states that:

"The general scope of the intended subject matter is not clear. The claims are drawn to a [sic] apparatus but applicants relies [sic] on the combination and subcombination of the operation of the apparatus. It is not clear if the applicant is relying on the apparatus and the operation of the intended invention for prosecution. The examiner has taken the invention to be directed to the apparatus and not the operation of the apparatus."

Initially, it is noted that virtually the same rejection was made in this application in the Office Action mailed on January 30, 2001. A response was filed on July 30, 2001 in which the rejection was strenuously traversed. Then, in the Office Action mailed on October 10, 2001, the rejection was withdrawn by the Examiner.

Now, for some inexplicable reason, the Examiner has reintroduced the rejection of the claims under 35 U.S.C. 112, second paragraph. Accordingly, a similar traversal of the rejection is set forth below.

The Examiner is requested to respond to the following:

1) What is the "combination and subcombination of the operation of the apparatus"?

2) What is meant by the statement "it is not clear if the applicant is relying on the apparatus and the operation of the intended invention for prosecution"?

As indicated in previous responses, the preamble of the independent claims recites "A component mounting apparatus", and the body of the claims sets forth a number of interrelated structural elements. Accordingly, there can be no question that the claims are directed to the apparatus. Note that claims 8 and 18 have been amended to clearly recite that the recited structure is defined in part by the capabilities thereof.

Furthermore, it is noted that the use of functional language to claim an invention is specifically approved by statute, the patent Office and the courts. The idea that functional language cannot ipso facto precisely define novelty in structure was laid to rest in In re Swinehart 169 USPQ 226 (Fed. Cir. 1971). In this regard, the Examiner's attention is directed to MPEP 2173.05(g), which specifically states that there is nothing wrong with defining some part of an invention in functional terms. This section of the MPEP further instructs that a functional limitation must be evaluated and considered, just like any other limitation of the claim, for what it fairly conveys to a person of ordinary skill in the pertinent art in the context in which it is used. This section of the MPEP also explains that a functional limitation is often used in association with an element to define a particular capability or purpose that is served by the recited element.

The inquiry to be made in determining whether a claim is definite under 35 U.S.C. 112, second paragraph, is whether those of ordinary skill in the art would understand what is being claimed. Amgen Inc. v. Chugai Pharmaceutical, Ltd., 18 USPQ2d 1016, 1030 (Fed. Cir. 1991). It is submitted that one of ordinary skill in the art would have no trouble understanding what is being claimed in the present claims, particularly in view of the fact that the claims are to be read in light of the specification.

In view of the above and the amendments to claims 8 and 18, the Examiner is requested to again withdraw the rejection of claims 8-11, 13-15 and 18-19 under 35 U.S.C. 112, second paragraph. The Examiner is also requested to withdraw the rejection of claims 20-34 under 35 U.S.C. 112, second paragraph.

In the event that the Examiner decides to repeat this rejection, then the Examiner is requested to specifically identify the language that renders the claim unclear. Should the Examiner persist in making this rejection, then the Examiner is requested to cite the authority for the position that the functional language, as employed in the rejected claims, is improper under 35 U.S.C. 112, second paragraph.

* * * * *

Next, on pages 3-4 of the Office Action, claims 8-11, 13-15, 18-19, 22-26 and 28-34 are rejected under 35 U.S.C. 102(b) as being anticipated by Baker (U.S. Patent No. 5,323,528). Also, on page 5 of the Office Action, claims 20, 21 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baker. The rejections over the Baker reference are traversed for the following reasons.

The present invention is directed to a component mounting apparatus includes:

(i) a head that is movable in the two directions (X and Y directions), which are perpendicular to each other; and

(ii) cassettes that are arranged in a direction that is parallel to the board transfer direction. In particular, lines 10-13 of claim 8 require that "the first mounting head section is moved in first and second directions which are perpendicular to each other, wherein the first direction is perpendicular to a direction in which the board is transferred, and the

second direction is located along the board transfer direction". Accordingly, claim 8 defines a head that can move back and forth in the first direction so as to move toward or away from component(s) located at component take-out position(s) at the component supply tables. Therefore, if a component is shifted from a predetermined position because of some attachment shift of the component supply table, the head is able to move back and forth in the first direction and then move toward or away from the component located at a component take-out position of the component supply table. Thus, the head can be positioned at the component take-out position to reliably and securely hold the component.

Baker discloses a component mounting apparatus having a rear board conveyor structure 21, a board carrying table 51, a left turret head 65, a right turret head 67, and component dispensing feeders 81, 83. As shown in Fig. 5, the board carrying table 51 is movable along the Y-axis 53 between a component mounting zone 57 and a board loading/unloading position 55. However, in the Baker apparatus, the left and right turret heads (corresponding to the claimed mounting head sections) are moveable only along the X axis 63.

Clearly the turret heads of Baker are not moveable the first and second directions specified in independent claims 8, 18 and 24, and therefore the Baker reference cannot anticipate these claims under 35 U.S.C. 102(b).

Furthermore, in the **Baker** apparatus, the mounting head can only move in the X direction (see Fig. 5). In other words, the Baker head can not move in the Y direction (i.e. perpendicular to the X direction 63), and therefore, the head is not capable of holding a component that has shifted from a predetermined component take-out position. That is,

when a component is located at a position shifted from a predetermined component take-out position because of some attachment shift of a component supply table, the head can not move back and forth in the Y direction and then can not move close or away from the component located at the component take-out position of the component supply table, and thus, the head can not hold the component.

In addition, in Baker, cassette feeders 81 are arranged in the X direction of Fig. 5, which is **perpendicular to** the Y direction along which a board is transferred. Thus, if the number of component supply tables is increased, the lateral size of the apparatus will necessarily be increased. Then, if such apparatuses, each having a large lateral size, are arranged adjacently along the lateral (X) direction, the apparatuses should be shifted from each other in the longitudinal direction as shown in the attached figure, resulting in the necessity of increasing the area for the apparatuses, and increasing the length of the central orthogonal connecting section 23 (i.e., the length for transferring the board), which then deteriorates the productivity of the apparatus per unit area.

In contrast, in the present invention, the component supply tables are arranged in the second direction along which a board is transferred. Thus, even if the number of component supply tables is increased, the length of the board transfer direction will only be slightly increased or not increased at all because the additional tables can be accommodated in a space between the adjacent apparatuses, which does not result in deteriorated productivity per unit area.


Therefore, the present invention is significantly different from the Baker apparatus with regard to the component supply table (cassette) arrangement direction, which results in significant advantages in the productivity of the apparatuses per unit area.

In view of the above, it is submitted that the present application is now clearly in condition for allowance. The Examiner therefore is requested to pass this case to issue.

In the event that the Examiner has any comments or suggestions of a nature necessary to place this case in condition for allowance, then the Examiner is requested to contact Applicant's undersigned attorney by telephone to promptly resolve any remaining matters.

Respectfully submitted,

Kanji HATA et al.

By: 
Michael S. Huppert
Registration No. 40,268
Attorney for Applicants

MSH/kjf
Washington, D.C. 20006-1021
Telephone (202) 721-8200
Facsimile (202) 721-8250
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Exhibit I

U.S. Patent

June 28, 1994

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5,323,528

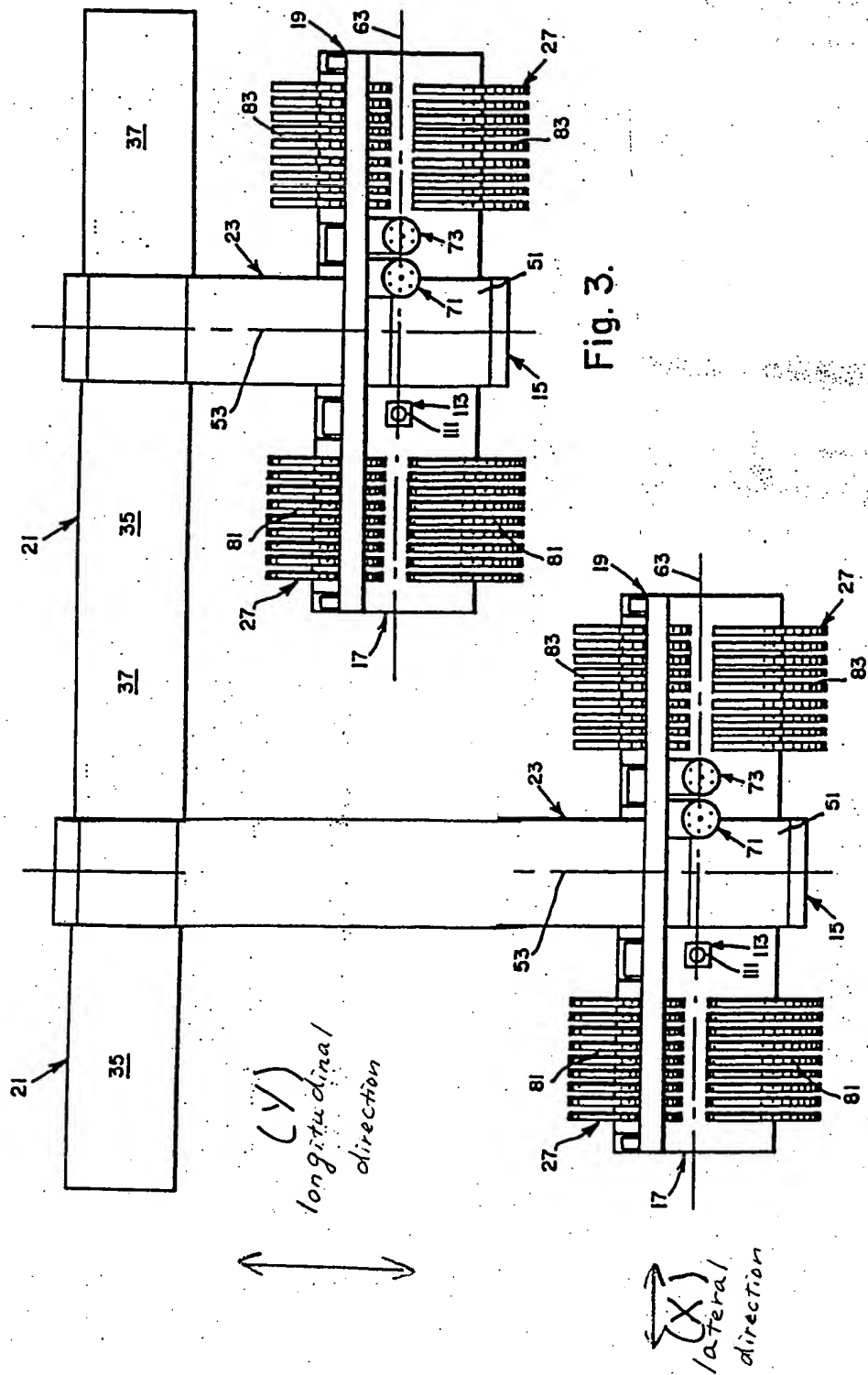


Fig. 3.

* mounting heads only move in X-direction 63



Version with Markings to
Show Changes Made

IN THE CLAIMS:

Please amend claims 8 and 18 as follows (a clean set of all of the pending claims is presented for the Examiner's convenience):

8.(Six Times Amended) A component mounting apparatus comprising:

a pair of component supply tables for accommodating a plurality of components, said component supply tables being arranged on opposite sides of a board mounting position;

a first mounting head section having a plurality of rotatably supported component suction nozzles, wherein the first head section can rotate the component suction nozzles for successively picking up the plural components at one of the component supply tables by suction, thereafter the first mounting head section [is] can be moved to a board positioned at the board mounting position, and thereafter the plural picked-up components [are] can be successively mounted onto the board while (LAB) the first mounting head section is moved in first and second directions which are perpendicular to each other,

wherein the first direction is perpendicular to a direction in which the board is transferred, and the second direction is located along the board transfer direction; and

a second mounting head section having a plurality of rotatable component suction nozzles, wherein the second head section is capable of rotating the component suction nozzles for successively picking up the plural components at the other of the component supply tables by suction, thereafter the second mounting head section is capable of moving [moves] the component suction nozzles to the board positioned at

the board mounting position, and thereafter the plural picked-up components [are] can
be successively mounted onto the board while the second mounting head moves in
third and fourth directions which are perpendicular to each other,

wherein the third direction is parallel to the first direction, and the fourth
direction is parallel to the second direction but is not necessarily the same as the
second direction,

wherein each of the first and second mounting head sections is
independently moveable between the component supply table and the board, and the
^(L&B)
first mounting head section is capable of mounting the plural picked-up components
onto the board while the second mounting head section successively sucks to pick up
the plural components at the other of the component supply tables.

18. (Thrice Amended) A component mounting apparatus comprising:

a pair of component supply tables for accommodating a plurality of
components, said component supply tables being arranged on opposite sides of a
board mounting position;

a first mounting head section for successively picking up the plural
components at one of the component supply tables and thereafter successively
mounting the plural picked-up components onto a board, positioned at the board
mounting position, while moving in first and second directions which are perpendicular
to each other,

wherein the first direction is perpendicular to a direction in which the board
is transferred, [and the second direction is located along the board transferred,] and the

second direction is located along the board transfer direction; and

a second mounting head section for successively picking up the plural components at the other of the component supply tables and thereafter successively mounting the plural picked-up components onto the board, positioned at the board mounting position, while moving in third and fourth directions which are perpendicular to each other,

wherein the third direction is parallel to the first direction, and the fourth direction is parallel to the second direction but is not necessarily the same as the second direction,

wherein each of the first and second mounting head sections is independently movable between the component supply table and the board,

(LAB)

wherein each of [one of] the first and second mounting head sections has a plurality of rotatably supported component suction nozzles for sucking a plurality of the components prior to a component mounting operation, and each of the [one] mounting head sections [section] is capable of rotating the component suction nozzles,

wherein the first mounting head section is capable of mounting [mounts] the plural picked-up components onto the board while the second mounting head section successively sucks to pick up ^{from the one of the component supply tables} a plurality of the components at the other of the component supply tables. _{the}